

BWSC's Clean Energy Results Program

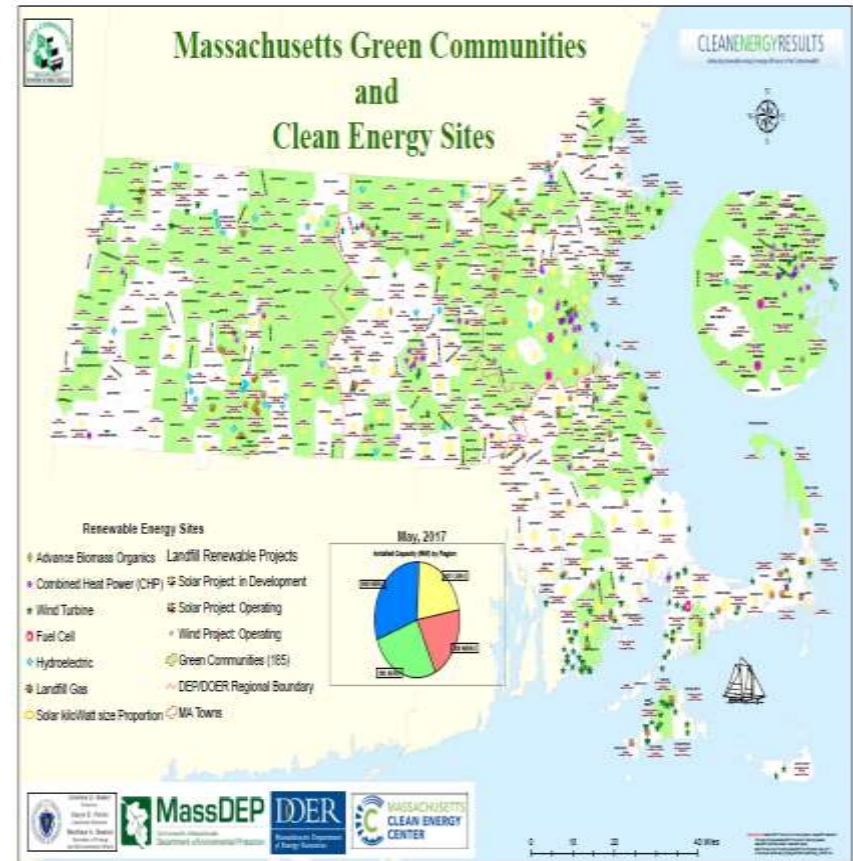
2016/2017 Clean Energy Update

Waste Site Cleanup Advisory Committee Meeting
Thursday, May 25, 2017

Thomas M. Potter
Clean Energy Development Coordinator

AGENDA

- **Clean Energy Industry**
- **Clean Energy Development**
 - Contaminated Land/Landfill
- **Solar Legislation**
 - S.M.A.R.T.
- **Renewable Thermal**
- **Clean Energy Legislation**
 - P.A.C.E.
 - E.S.I.
 - Hydroelectric

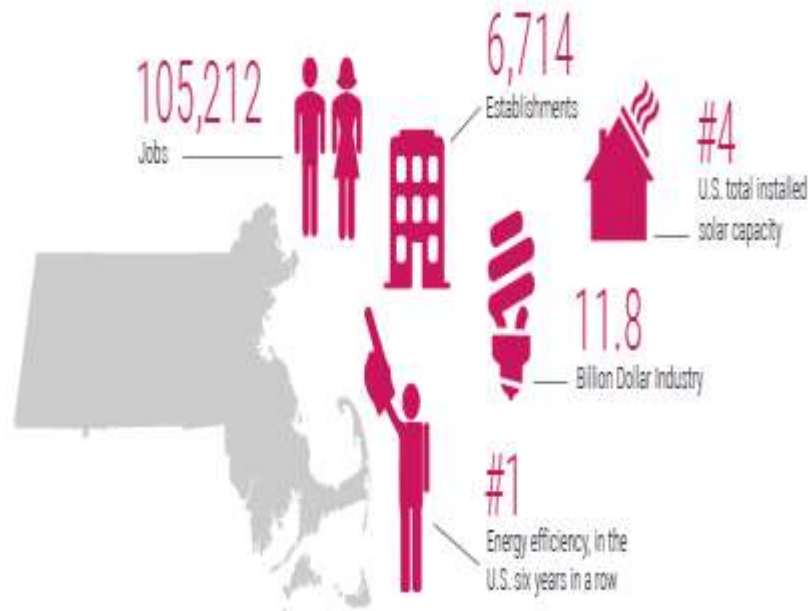


2016 Clean Energy Industry Report

<http://www.masscec.com/2016-massachusetts-clean-energy-industry-report-0>

By The Numbers . . .

MASSACHUSETTS BY THE NUMBERS



PV Jobs

FIGURE 5.4 RENEWABLE ENERGY GENERATION EMPLOYMENT GROWTH, 2015-2016: Establishments hired more than 5,100 renewable energy workers in 2015—a growth rate of almost 22 percent.

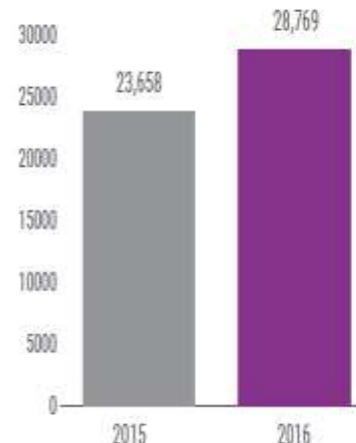
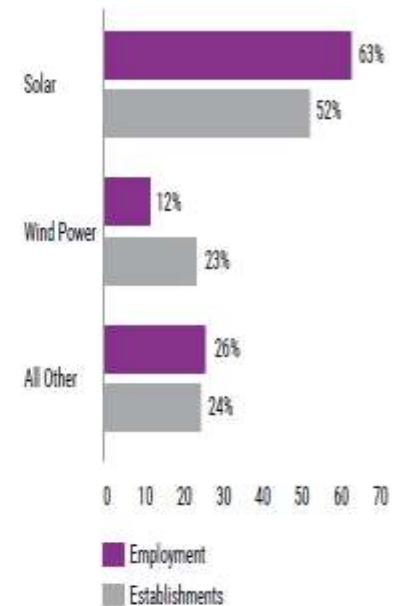


FIGURE 5.5. RENEWABLE ENERGY JOBS BY SUB-TECHNOLOGIES, 2015-2016: Solar jobs and establishments led the Renewable Energy Generation sub-technologies

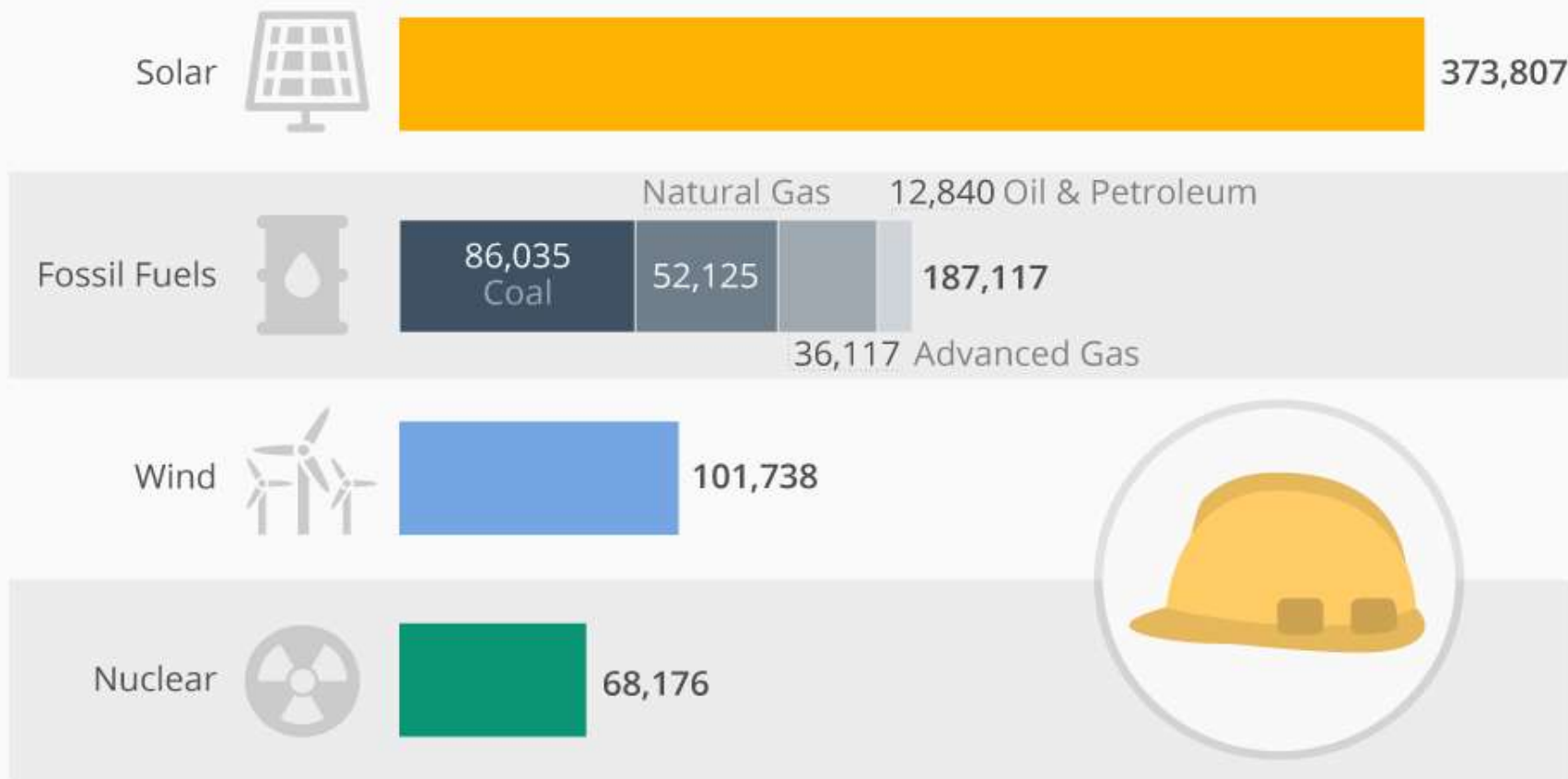


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More Workers In Solar Than Fossil Fuel Power Generation

Employment in energy generation by source in the U.S. in 2016



@StatistaCharts

Source: U.S. Department of Energy

Forbes statista

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2017 Congressional Testimony

[South Coast Today, Steve Urban, 2/17/17, <http://www.southcoasttoday.com/news/20170216/new-bedford-mayor-tells-congress-of-brownfields-successes>]

- “New Bedford has pursued renewable energy as one creative solution to the redevelopment of brownfield and Superfund sites, and in the process, turned environmental liabilities into economic assets for the community”
- “Sullivan’s Ledge, once an old quarry filled with toxic waste and now a 10-acre solar farm that saves the city millions of dollars a year.”



2012 MassDEP GOALS

Contaminated Land Development

- **CL: 50 MW Clean Energy by 2020**
- **LF: 75 MW Clean Energy by 2020***
- **Primarily Solar Photovoltaic's (PV)**
 - Some wind
- **Size: 0.5 to 2.0 MWs**



Brockton Brightfields, 425 kW solar PV

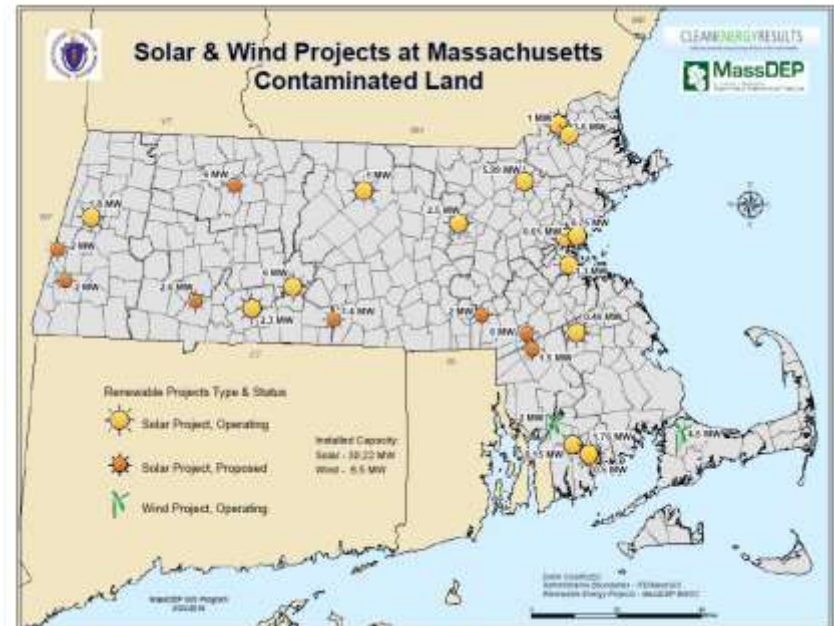
*MassDEP Bureau of Waste Prevention (BWP)

Contaminated Land Development Status

(as of 4/24/17)

• ~~26~~ 36 Total Projects (104.6 MWs)

- 20 projects (47.4 MW) are now operating. (yellow)
- 16 projects (57.2 MWs) either have DOER “Brownfield Pre-Determination” letters and/or are seeking financing and interconnection permits (orange)



<http://www.mass.gov/eea/agencies/masdep/climate-energy/energy/contaminated-land-and-brownfields/>

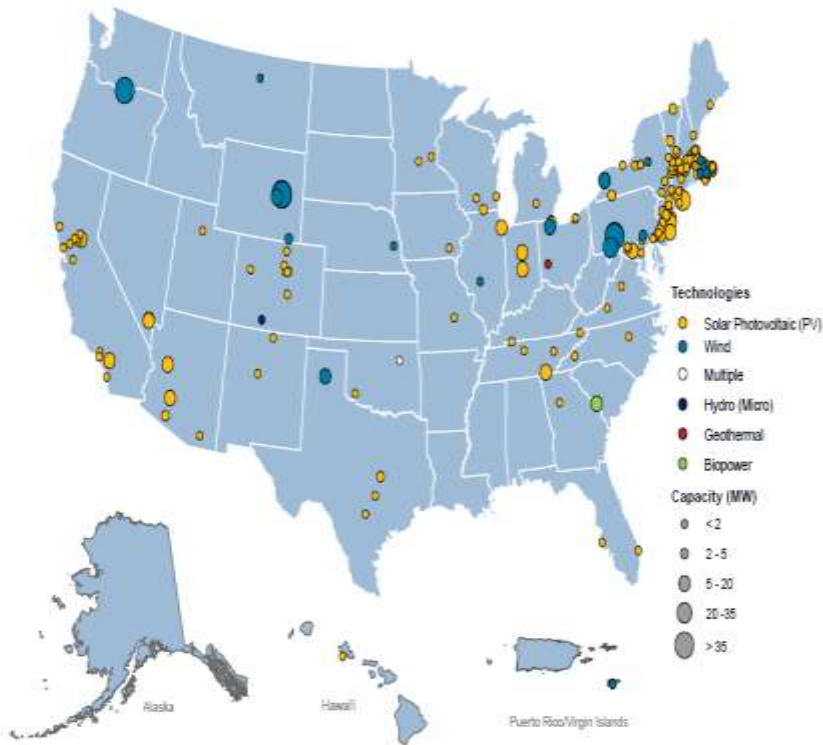
(as of 4/24/17)

-
- A map of Massachusetts showing the locations of solar and wind projects at landfills. The map is titled "Solar and Wind Projects at Landfills in Massachusetts Landfills". It displays the state's geography, including major cities, towns, and roads. Numerous orange sun icons and yellow wind turbine icons are scattered across the state, indicating the locations of these projects. The map includes a scale bar at the bottom right, showing distances in miles (0 to 40) and kilometers (0 to 60). The date "March 17, 2017" is printed at the bottom left. The map is sourced from Esri, DeLorme, Garmin, and other providers, as indicated by the text at the bottom right.

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APRIL 2017: USEPA's RE-Powering America's Land Initiative

213 Renewable Energy Projects, Over 1.2 Gigawatt Installed Capacity



This map is for informational purposes only. The information was gathered from public announcements of renewable energy projects in the form of company press releases, news releases, and, in some cases, conversations with the parties involved. This map may not be a comprehensive representation of all completed renewable energy projects on contaminated lands. To provide information on additional projects, please email cleanenergy@epa.gov.

April 2017

State	# Installations	Installed Capacity (MW)
MA	75	168.7
NJ	18	100.4
NY	16	81.4
CA	14	105.0
CO	8	7.1
PA	6	178.5
OH	6	11.7
WY	5	295.8
AZ	4	30.0
MD	4	23.1
TX	4	14.6
TN	4	10.1
VT	4	5.3
CT	4	4.9
WI	3	2.9
NV	2	28.2
IN	2	17.8
IL	2	10.9
NM	2	3.0
FL	2	2.3
VA	2	1.6
DE	2	0.7
NC	2	0.6
MN	2	0.5
OK	2	0.0
OR	1	100.0
RoUS ¹⁴	17	30.3
TOTAL	213	1,235.4

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2016

- SREC II Program goal met in February 2016
- Net Metering program met by March 2016

Date: 3/3/2016							
Private and Public, All Utilities (Values in kW-AC)							
		Capacity (kW)					
Net Metering Cap		999,942		March 2016 Net metering Queue			
Interconnected		601,218					
Reserved Cap Allocations		235,765					
Pending Cap Allocations		32,351					
Capacity Available under the Cap		130,608					
Private: Available, Interconnected, Reserved and Pending Capacity (Values in kW)							
Company	Net Metering Cap	Interconnected (a)	Reserved Cap Allocations (b)	Pending Cap Allocations (c)	Capacity Available Under Cap (e)	Waiting List (d)	
NGrid	205,240	129,193	73,679	1,153	1,215	121,689	
NStar	199,120	98,632	54,470	14,497	31,521	0	
WMECO	34,160	14,208	3,780	3,502	12,671	0	
Unitil	4,080	3,325	745	0	10	369	
NGrid-Nantucket	1,819	0	24	29	1,765	0	
Total	444,419	245,358	132,698	19,180	47,183	122,059	
Public: Available, Interconnected, Reserved and Pending Capacity (Values in kW)							
Company	Net Metering Cap	Interconnected (a)	Reserved Cap Allocations (b)	Pending Cap Allocations (c)	Capacity Available Under Cap (e)	Waiting List (d)	
NGrid	256,550	205,386	47,974	3,119	71	65,686	
NStar	248,900	127,871	41,347	8,352	71,330	0	
WMECO	42,700	19,456	13,746	1,700	7,797	0	
Unitil	5,100	3,047	0	0	2,053	0	
NGrid-Nantucket	2,274	100	0	0	2,174	0	
Total	555,524	355,860	103,067	13,171	83,426	65,686	

March 2016
Net metering
Queue

An Act Relative to Solar Energy

- ***“An Act Relative to Solar Energy” (Ch. 75 of the Acts of 2016), April 2016***
 - “legislation provides immediate relief to the solar industry by **raising the public and private net metering caps** from 5% of utilities’ peak load **to 8%** and from 4% of utilities’ peak load **to 7%**, respectively. Additionally, the bill allows the Department of Energy Resources (DOER) and the Department of Public Utilities (DPU) to **gradually transition the solar industry to a more self-sustaining model**. This approach includes robust stakeholder outreach, and will establish the **next generation solar incentive program** at a reduced cost.
 - Next Generation Solar Incentive Straw Proposal, September 2016
 - Solar Massachusetts Renewable Target (SMART), January 2017

Solar Incentive Programs (a.k.a. SREC)

SREC 1 (2009)	SREC II (2014)	SREC II Ext. (2017)	SMART (2018)
400 MW's	1,200 MW's	TBD	1,600 MW's
No restrictions on growth. Land-use issues in some communities – particularly with regard to use of agricultural lands, open space, and forestland	<ul style="list-style-type: none"> Financial incentives differentiated between Market Sectors Favorability to Landfill and Brownfield type projects Deadline of 1/8/17 	<ul style="list-style-type: none"> Demonstrate that they are mechanically complete or commercially operational Systems with a capacity = < 25 kW DC will still receive an SREC Factor of 0.8, receives authorization to interconnect before effective date SMART program 	<ul style="list-style-type: none"> 9/16 “Next Generation Solar Incentive Program” 1/17 “Solar Massachusetts Renewable Target” DOER Regulations 225 CMR 17.00 (6/5/17) DPU Tariff
100% SREC	BF = 80% SREC	BF = 55% SREC	BF = \$0.03/kWh
Met 2013	Met 2016	Ends 3/31/18	March 2018?

SREC II Transition

- DOER approved an extension of SREC II projects until the start of the next program
- Systems over 25kW that are mechanically complete by March 31, 2018 will receive a 30% SREC Factor Reduction

Market Sector	SREC Factor
A	0.7
B	0.6
C	0.55
Managed Growth	0.5

- If the SMART program is not in effect by March 31, 2018, and systems do not achieve mechanical completion by that deadline, they will receive a further reduced SREC Factor

Date: 3/17/2017

Private and Public, All Utilities (Values in kW-AC)

March 2017 Net Metering Queue

Capacity (kW)

Net Metering Cap 1,667,250

Interconnected 789,304

Reserved Cap Allocations 448,635

Pending Cap Allocations 20,497

Capacity Available under the Cap 408,813

Private: Available, Interconnected, Reserved and Pending Capacity (Values in kW)

Company	Net Metering Cap	Interconnected (a)	Reserved Cap Allocations (b)	Pending Cap Allocations (c)	Capacity Available Under Cap (e)	Waiting List (d)
NGrid	359,170	199,254	158,164	1,148	604	6,426
NStar	348,460	144,605	78,690	4,353	120,813	0
WMECO	59,780	21,957	30,972	187	6,664	0
Unitil	7,140	4,297	2,832	0	11	63
NGrid-Nantucket	3,500	379	496	0	2,625	0
Total	778,050	370,492	271,154	5,688	130,717	6,489

Public: Available, Interconnected, Reserved and Pending Capacity (Values in kW)

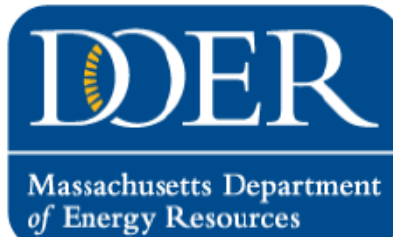
Company	Net Metering Cap	Interconnected (a)	Reserved Cap Allocations (b)	Pending Cap Allocations (c)	Capacity Available Under Cap (e)	Waiting List (d)
NGrid	410,480	247,909	118,928	9,919	33,724	0
NStar	398,240	145,512	46,427	4,890	201,412	0
WMECO	68,320	22,033	8,927	0	37,360	0
Unitil	8,160	3,259	3,200	0	1,701	0
NGrid-Nantucket	4,000	100	0	0	3,900	0
Total	889,200	418,812	177,482	14,809	278,097	0

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COMMONWEALTH OF MASSACHUSETTS

Charles D. Baker, Governor

Karyn E. Polito, Lt. Governor

Matthew A. Beaton, Secretary

Judith Judson, Commissioner

**Final Solar Incentive
Program Design**

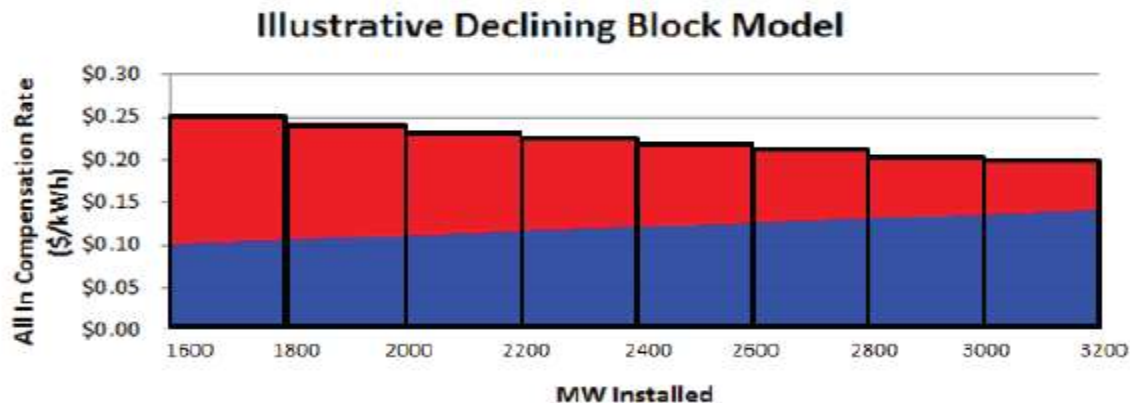
January 31, 2017

Boston, MA

**Solar Massachusetts Renewable Target
(SMART)
Final Program Design**

Solar MA Renewable Target (SMART)

- 1,600 MW AC declining block tariff program
- Each “block” is 200 MW;
 - One statewide rate for all IOUs
 - Block allotment by utility based on distribution load
- Size-based base compensation rate
 - Policy-, location- and off-taker based adders that can be aggregated
 - Rates and adders decline by 4% after each block
 - For state projects: 20 year term
- Two important definitions: **standalone** vs. **behind-the-meter** (compensation structure will vary)
- Maximum project size of 5 MW per parcel



Setting the Base Rate

- Initial competitive procurement (100 MW) will establish base compensation rate for projects > 1 MW
 - Indices will be used to set rates for all other project size categories (see table below)
 - State entities cannot participate in initial procurement but can reserve Block 1 capacity through remaining 100 MW allotment

Capacity Based Compensation Rates (kW AC)			
Generation Unit Capacity	Capacity Based Rate Factor (% of Clearing Price)	Capacity Based Rate (\$/kWh)	Term Length
Low income less than or equal to 25 kW AC	230%	\$0.3450	10-year
Less than or equal to 25 kW AC	200%	\$0.3000	10-year
Greater than 25 kW AC to 250 kW AC	150%	\$0.2250	20-year
Greater than 250 kW AC to 500 kW AC	125%	\$0.1875	20-year
Greater than 500 kW AC to 1,000 kW AC	110%	\$0.1650	20-year
Greater than 1,000 kW AC to 2,000 kW AC	100%	\$0.1500	20-year
Greater than 2,000 kW AC to 5,000 kW AC	TBD	<=\$0.1400	20-year

Adder Values

Location Based Adders	
Type	Adder Value (\$/kWh)
Building Mounted	\$0.02
Brownfield	\$0.03
Landfill	\$0.04
Solar Canopy	\$0.06

Off-taker Based Adders	
Type	Adder Value (\$/kWh)
Public Entity	\$0.02
Community Shared Solar (CSS)	\$0.05
Low Income Property Owner	\$0.03
Low Income CSS ¹	\$0.06

1. Must be at least 50% R-2 customers

Solar + Energy Storage	
Type	Adder Value (\$/kWh)
Storage + PV	Variable

- Adders from different categories can be aggregated
- Adders decline by 4% after each block
- Energy storage adder determined by:
 1. Ratio of storage capacity to solar capacity
 2. Duration of the storage
- Greenfield "subtractor" applied for any open space project that does not meet criteria

System Type Definitions

- Definitions for Landfills, Brownfields, Building Mounted, and Low Income Properties will remain unchanged
- Definitions for Solar Canopies and Community Shared Solar will be slightly modified
- New definitions will be added for:
 - Low Income Residential
 - Low Income Community Shared Solar
 - Behind-the-Meter Energy Storage
 - Standalone Energy Storage
 - Non-net Metered Facilities

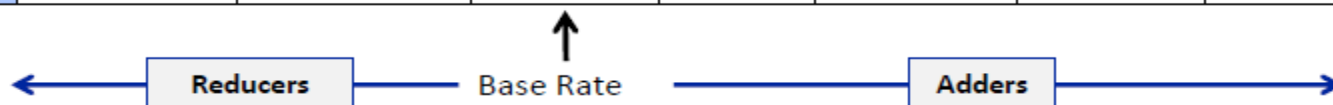
“Next Generation Solar Incentive Program” (September 2016)

- Development of Solar Siting Criteria
- April 2016 letter from Mass Audubon, Mass Land Trust Coalition, The Nature Conservancy and the Trustees of Reservations
- DOER in consultation with EEA and other state agencies will issues future guidance
- Ground mounted projects will be **PROHIBITED** from qualifying if sited in any of the following areas:
 - MassDEP Wetlands
 - Prime Farmland Soils
 - Prime Forest Land
 - BioMap2 Core Habitat and Critical Natural Landscape
 - Designated Priority Habitat of state-listed rare species
 - Permanently Protected Open Space
 - Land Designated as “Forest Land under Chapter 61
 - Any Archaeological site listed in the State Register of Historic Places or Inventory of Historic and Archaeological Assets of the Commonwealth

Land Use

- Original proposal on land use and siting criteria would have precluded significant portions of the state from receiving incentives for ground mounted projects
- Also relied heavily on GIS data layers
- Revised proposal provides exclusions from incentives for far fewer areas
- Under revised proposal, ground mounted projects that are larger than 500 kW, not sited on a brownfield or landfill, and are on land that has not been previously developed, will be subject to a \$/kWh subtractor that changes based on the number of acres impacted
- All ground mounted projects will also be subject to a set of performance standards developed in consultation with the Department of Agricultural Resources

Project Type	Ground Mounted and not C&I Zoned	Ground Mounted, C&I Zoned, and NOT Previously Developed	Ground Mounted, C&I Zoned, and Previously Developed	Rooftop	Brownfields	Landfill	Parking Lot Canopy
Compensation Rate (\$/kWh)	X - \$0.001/acre	X - \$0.0005/acre	X	X + \$0.02	X + \$0.03	X + \$0.04	X + \$0.06



Creating A Clean, Affordable, and Resilient Energy Future For the Commonwealth

DER

Massachusetts Department of Energy Resources

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Land Use Categories

Category	Description	Incentive Level
Category 1	<ul style="list-style-type: none"> All ground-mounted projects greater than 500 kW AC and less than or equal to five (5) MW AC that are zoned for commercial/industrial use or specifically for solar/power generation, but have been previously developed All projects on brownfields, landfills, rooftops, canopies, and all other ground-mounted projects not sited on brownfields or landfills that are equal to or less than 500 kW AC, including: <ul style="list-style-type: none"> Low Income Projects Community Solar Projects Projects serving Municipal/Governmental Entities Non-canopy projects on Land in Agricultural Use or on Prime Agricultural Farmland Soils sized to meet no greater than 200% of annual operation load 	Base Incentive + Applicable Adder(s)
Category 2	<ul style="list-style-type: none"> All ground-mounted projects greater than 500 kW AC and less than or equal to five (5) MW AC that are not sited on brownfields or landfills and are zoned for commercial/industrial use or specifically for solar/power generation, which have not been previously developed, including: <ul style="list-style-type: none"> Low Income Projects Community Solar Projects Projects serving Municipal/Governmental Entities 	Base Incentive – Half Greenfield Subtractor + Applicable Adder(s)
Category 3	<ul style="list-style-type: none"> Ground-mounted projects greater than 500 kW AC and less than or equal to five (5) MW AC that are not sited on brownfields or landfills and are not zoned for commercial/industrial use <ul style="list-style-type: none"> Low Income Projects Community Solar Projects Projects serving Municipal/Governmental Entities 	Base Incentive – Full Greenfield Subtractor + Applicable Adder(s)
Category 4	<ul style="list-style-type: none"> Ground-mounted projects not meeting the Category 1, 2, or 3 criteria Projects on permanently protected open space that do not meet the criteria of category 4 Projects sited on Wetland Resource Areas (not including Buffer Zones), as defined in the Massachusetts Wetland Protection Act, except as authorized by regulatory bodies Historical/Archaeological Sites listed on the National/State Register of Historic Places, except as authorized by regulatory bodies 	No Incentive

^[1] Full Greenfield Subtractor = \$0.001/kWh per acre of land impacted

^[2] Half Greenfield Subtractor = \$0.0005/kWh per acre of land impacted

DER

Massachusetts Department
of Energy Resources

Land Use Performance Standards

- No stripping of soils
- For conventional ground mounted systems, ballasts or screw-type pilings that do not require footings or other permanent penetration of soils for mounting are required
- For agricultural integrated systems using canopies, any soil penetrations that may be required for providing system foundations necessary for structural loading shall do so with minimal soils disturbance, with any displaced soils to be temporary and recovered and returned after the penetration is completed.
- Absolute minimum soils/site disturbance; any soil penetrations that may be required for providing system trenching necessary for electrical routing shall be done with minimal soils disturbance, with any displaced soils to be temporary and recovered and returned after the penetration and trenching is completed
- No concrete or asphalt in the mounting area
- Address existing soil and water resource concerns that may be impacted
- Limited use of geotextile fabrics
- Where not practical to also use the area for agricultural production, maintain vegetative cover to prevent soil erosion, etc.

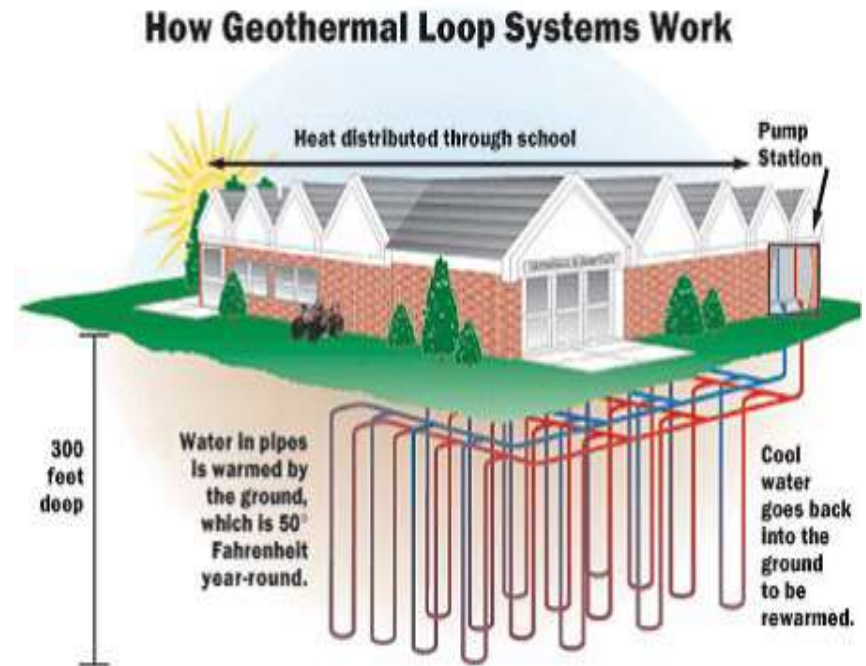
Next Steps

- DOER hopes to file an emergency regulation with the Secretary of the Commonwealth in mid May
- Dates for public hearing(s) and the deadline for the written comment period will be announced at the time the regulation is filed
- **June 5, 2017 – Emergency Regulation Filed**
- **July 11, 2017 - Public Hearing, MassART, Boston**

[July 11, 2017 - INK: http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/rps-aps/development-of-the-next-solar-incentive.html](http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/rps-aps/development-of-the-next-solar-incentive.html)

RENEWABLE THERMAL TECHNOLOGY APPLICATIONS AT CONTAMINATED PROPERTIES IN MASSACHUSETTS: GROUND-SOURCE HEAT PUMPS (GSHP)

- May 2015 LSP Training
- Possible GSHP uses/benefits include:
 - Use of GSHP generated heat for the treatment processes
 - Use of GSHP in place of electrical resistive heating in the treatment process
 - Use of GSHP to provide space heating and cooling for treatment system housing and/or nearby buildings
- Remedy Repurposing to realize the heating/cooling benefits for a nearby heating/cooling “load”
- **Funding – Federal & State?**



Source: DOER at:

<http://www.mass.gov/eea/docs/doer/renewables/thermal/about-geothermal-heat-pumps-handout.pdf>

GSHP Incentives

FEDERAL

- 30% Residential Renewable Energy Tax Credit
- 10% Investment Tax Credit – Commercial
- Residential Expired December 31, 2016
- Congressional reauthorization?

STATE

- Ground-Source Heat Pumps not included and not incentivized in Alternative Energy Portfolio Standard (APS) Regulations
- December 2014 – Draft regulations.
- June 2, 2017 – Draft Amended Regulations
 - Public Comment July 14th
- <http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/renewable-thermal/eligible-technologies-alternative-portfolio-std-rulemaking.html>

MassCEC Commercial-Scale Ground-Source Heat Pump Program



- Initial November 2014 program did not include commercial projects
 - *May 2015 LSP Training*
- May 2016 launch of residential/small-scale commercial and commercial programs.
- **February 2017 Update**
 - Will be updated to reflect finalized APS regulations and guidelines
- \$30 Million Grant Program through 2020.
- Installations of high-efficiency GSHP's at commercial, public, non-profit, agricultural, and multi-family properties.
- Comply with MassDEP Bureau of Water Resources UIC Program Guidelines

An Act to Promote Energy Diversity

- ***“An Act to Promote Energy Diversity” (H 4568), July 2016***
 - Energy Storage Systems/Energy Storage Initiative (E.S.I.)
 - Property Assessed Clean Energy (P.A.C.E.)
 - Small Hydroelectric Power Net Metering Facility

MASSACHUSETTS ENERGY STORAGE INITIATIVE

STATE OF CHARGE

September 27, 2016



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Energy Storage Systems/Energy Storage Initiative



Study Results



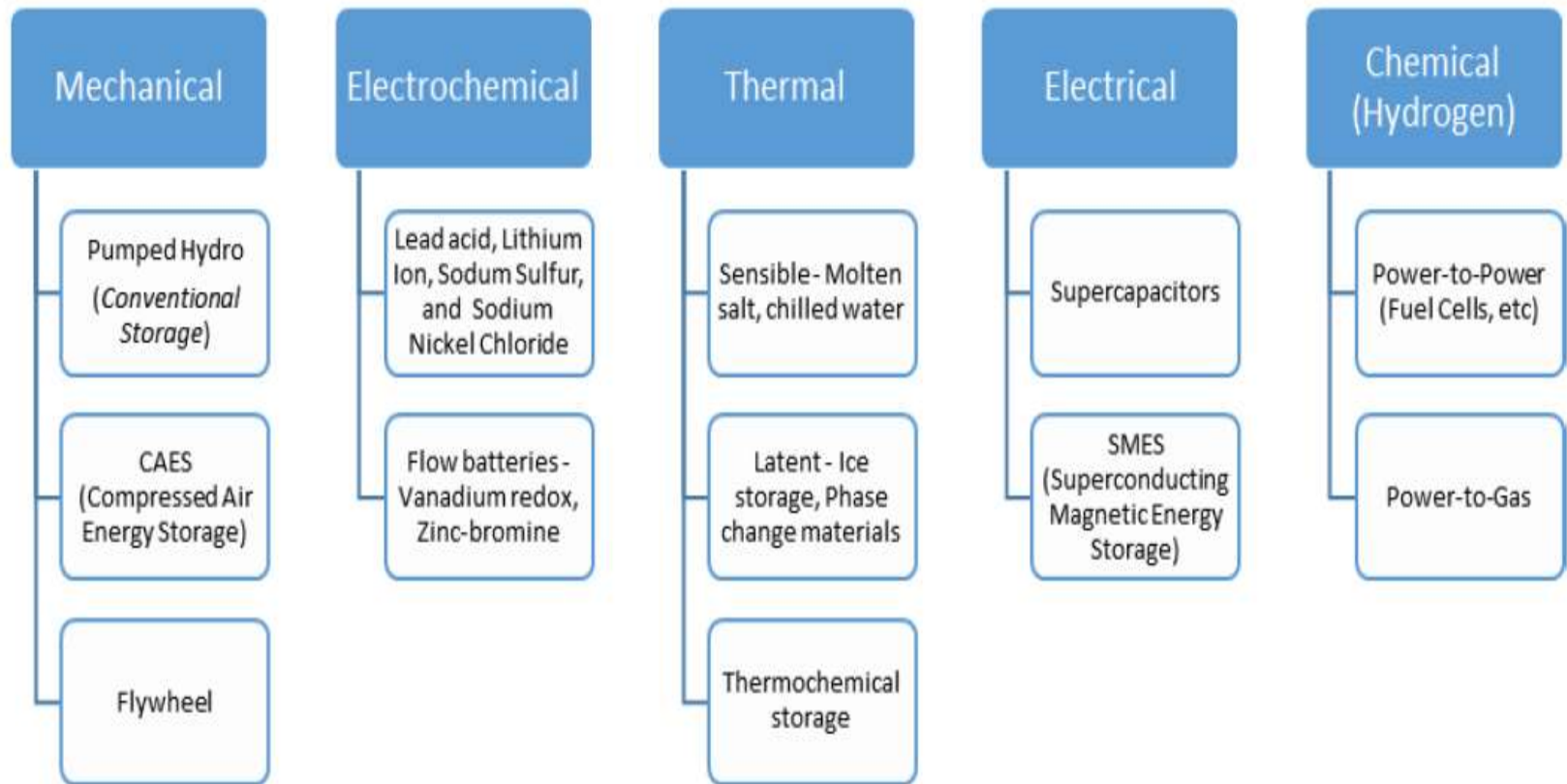
- Recommends a suite of policies designed to promote the development of **600 MW of advanced energy storage in Massachusetts by 2025.**
- Provides \$800 million in system benefits to Massachusetts ratepayers.
- Policies will increase grid resiliency and reduce greenhouse gas emissions
- Recommendations include:
 - *Demonstration funding through the ESI, Inclusion in existing DOER and MassCEC grant programs, encouraging expanded use of energy storage in existing energy efficiency programs, considering energy storage as a utility grid modernization asset, amending the Alternative Portfolio Standard (APS) to include all types of advanced energy storage, Inclusion of solar plus storage in the next solar incentive program, and enabling pairing storage with renewables in future long-term clean energy procurements.*



Study Recommendations for Energy Storage

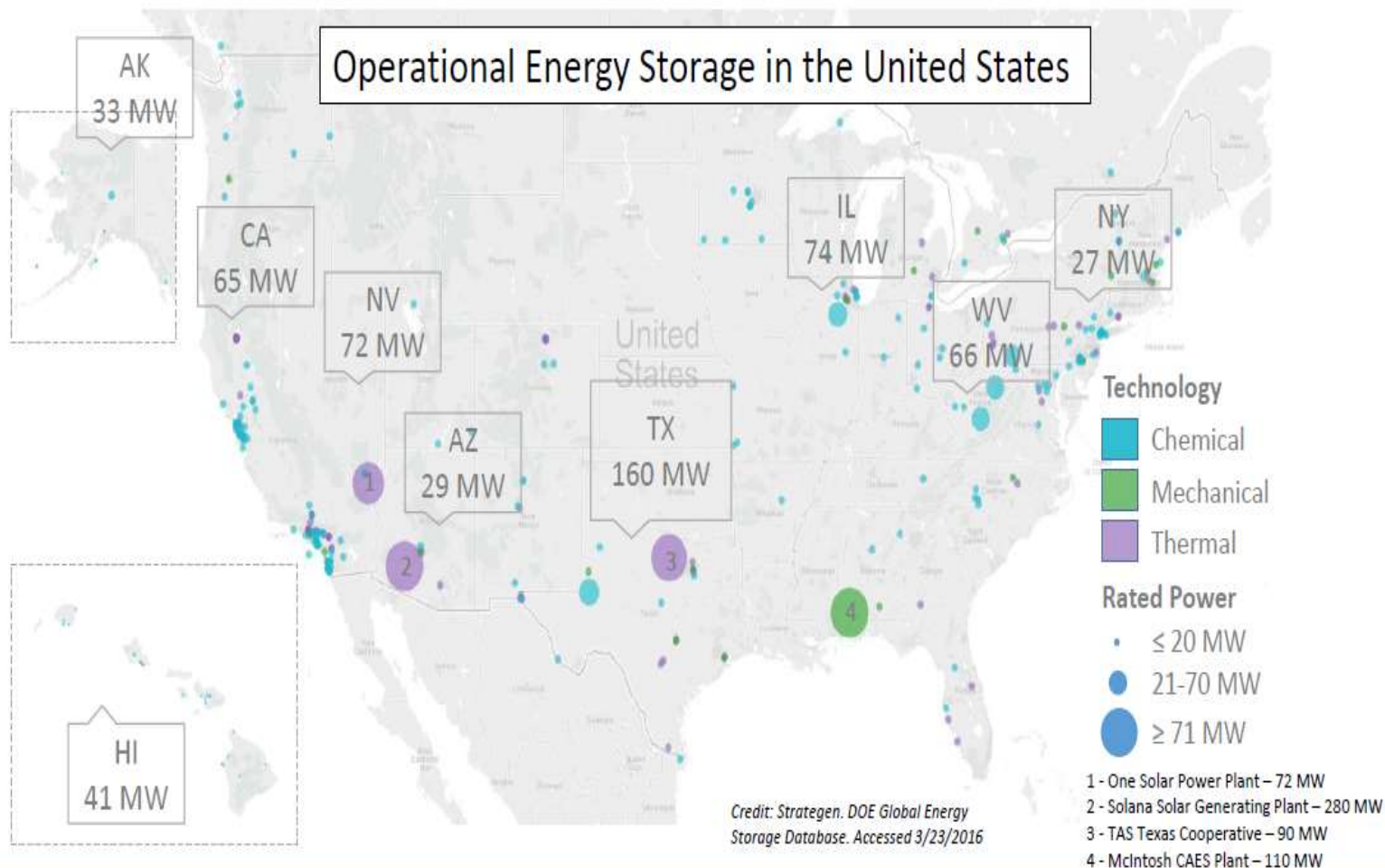
- Inclusion in existing DOER & MassCEC Grant Programs
- Encourage expanded use of energy storage in existing energy efficiency programs
- Consider energy storage as a utility grid modernization asset
- Amend the Alternative Portfolio Standard (APS) to include all types of advanced energy storage
- Inclusion of solar plus storage in the next solar incentive program (S.M.A.R.T.)
- Enable pairing storage with renewables in future long-term clean energy procurements

Advanced Energy Storage Technologies



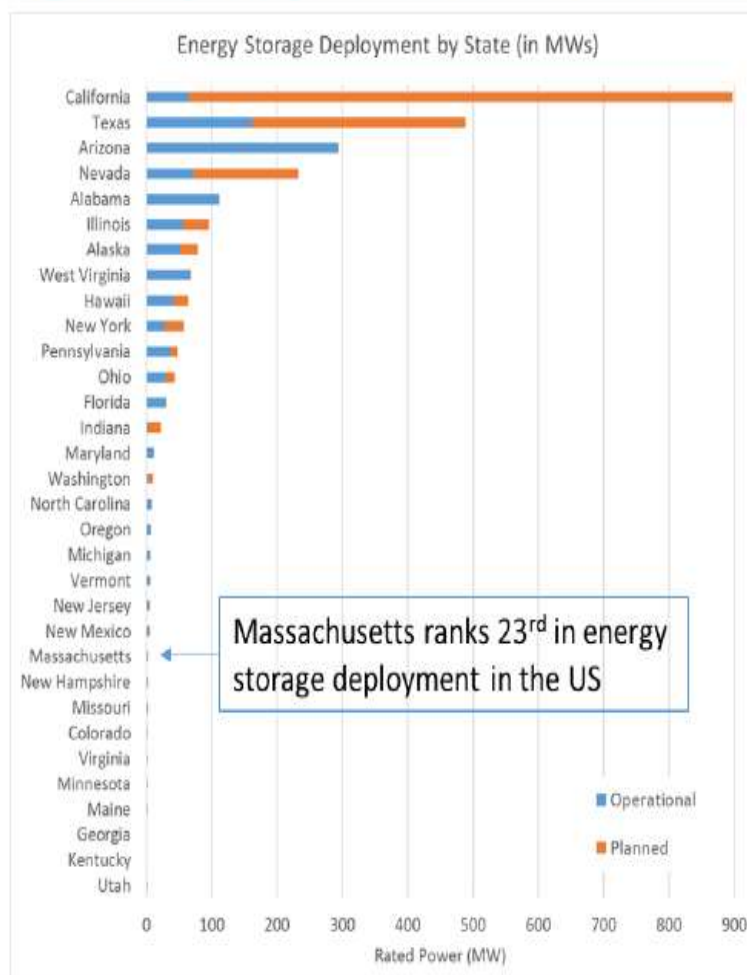
- Pumped Hydro Storage is often referred to as a “conventional” storage technology
- More recent emerging forms of energy storage such as batteries, flywheels, and new compressed air energy technologies are often referred to as “**advanced energy storage**”.

Storage is Real: Growing Deployment in the US & Globally



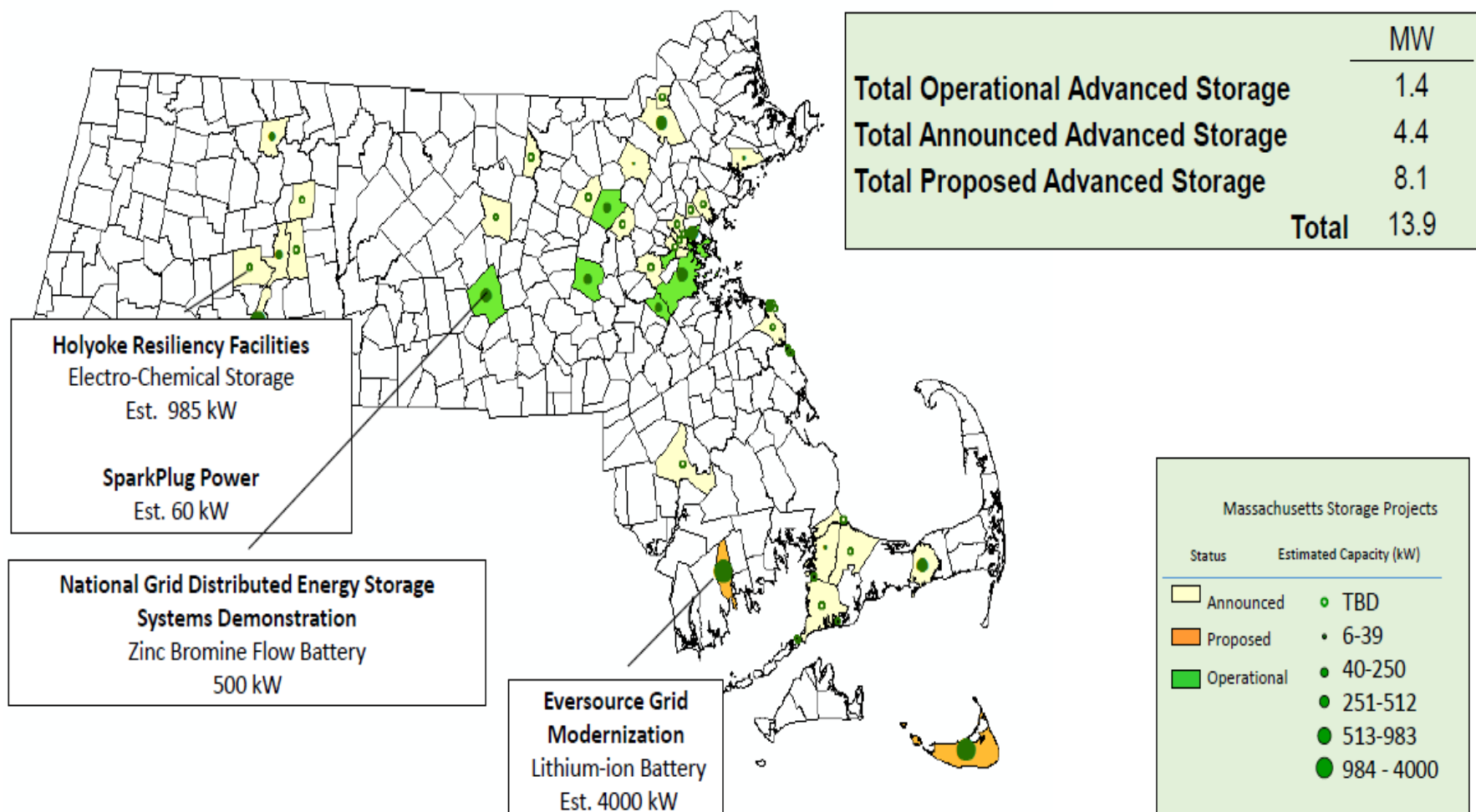
Advanced energy storage has moved out of the research and development phase. It is commercially viable and there are over **500 MW** operating throughout the US.

Growing Deployment in Other States



While many other states have already begun deploying large amounts of advanced storage capacity, Massachusetts is lagging behind.

Interest in Utilizing Storage is Growing in Massachusetts but Deployment is Limited (2 MW)



Recommendations to Unlock the Use of Storage in MA

GRANT AND REBATE PROGRAMS

- **Energy Storage Initiative (ESI) RFP**
 - Launch Project Demonstrations for Use Case Business Models to Jump Start market
- **Rebate Program for Customer-sited Storage (“MOR-Storage”)**
 - Encourage BTM Storage where it can reduce cost of electricity and create system benefits through reduced peak demand and greater utilization of on-site generation
 - Funded through \$20 million ACP
- **Launch C&I Solar + Storage Feasibility Grant programs**
 - Assist businesses and manufacturers to evaluate adding BTM storage
 - \$150,000 Mass CEC program
- **Community Resiliency Grants – Part III**
 - Resiliency grants for critical C&I (e.g. hospitals) which may include storage, \$14 million
- **Green Communities Designation and Grants**
 - Enable storage as a technology in grant applications

RFP Seeking “Concept Paper”

- **Projects deploy commercially viable energy resilience technologies** providing measureable energy resilience, risk management, clean energy and/or climate benefits
- Enable facilities to provide critical goods and services to the communities they serve **during extended electric grid failures.**
- **Consideration for OHM remedial systems at service stations**

Project Examples

- City of Boston Installed solar plus storage at refueling locations
- **British petroleum installed solar PV on canopies over fueling areas.**
- Boston Evacuation Routes (e.g. Blue Hill Ave) installed solar panels and battery storage at key intersections to maintain traffic signals

MassCEC

Resilient (Service) Stations Challenge

What & When

- InnovateMass will provide funding
 - \$250,000 Total Available
 - \$75,000 per project.
- **RFP Responses DUE:
7/14/17 @ 4:00 PM**

Check: “Expression of Interest”

- Expressions of Interest publicly available on the MassCEC website to help facilitate formation of RFP applicant teams.
- Expressions of Interest will not affect selection of applicants.
- Expressions of Interest respondents [here](#)

Property Assessed Clean Energy (P.A.C.E) for Commercial Buildings

- New mechanism to finance energy improvements, such as energy-efficiency projects, renewables, and gas line extensions, on commercial and industrial properties in Massachusetts.
- Property owner agrees to a betterment assessment on their property, which repays the financing. Approach enables owners to undertake more comprehensive energy upgrades with longer payback periods of up to 20 years.
- At property sale, the lien stays with the property and is transferred to subsequent property owners.



MASSDEVELOPMENT



- Individual municipalities may opt into PACE by a majority vote of the city or town council or the board of selectmen, as appropriate.
- Properties eligible for financing through PACE include:
 - Commercial buildings
 - Industrial buildings
 - Multi-family buildings with five or more units
- Improvements eligible for financing through PACE must be permanently fixed to the property. Eligible improvements include:
 - Energy efficiency upgrades
 - Renewable energy
 - Extension of existing natural gas distribution to a property

P.A.C.E. for Commercial Buildings (cont.)

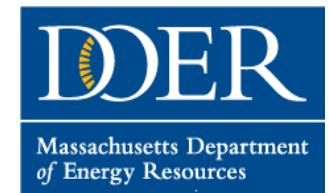
1. Sustainable Property Development (e.g. LEED)

- Massachusetts #1 – most LEED-certified space per resident



2. “TENTATIVE”

- Consideration of *Active Remedial Systems* and their associated components for financing under the commercial Property Assessed Clean Energy (PACE) finance mechanism



Thank You!

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Climate & Clean Energy Program Website:

<http://www.mass.gov/eea/agencies/massdep/climate-energy/>